SPECIFICATION:

TITLE OF INVENTION: The mike 8001 induction motor design.

CROSS –REFERENCE TO RELATED APPLICATION: not applicable

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OF DEVELOPMENT: not applicable

REFERENCE TO SEQUENCE LISTING, A TALBE, OR A COMPUTER PROGRAM LISTING COMPACT DISK APPENDIX: not applicable

BACKGROUND OF THE INVENTION:

The " induction motor" mentioned in this application is the most commonly used kind of induction motor, it gets no electrical winding in its rotor assembly, only its stator gets electrical winding.

Textbook definition of "nonmagnetic material": materials whose permeabilities are the same as that for free space. (Like copper, aluminum)

Textbook definition of "diamagnetic material": materials that have permeabilities slightly less than that of free space.

There are three categories of systems used in refrigeration & a/c (air condition) system: the first is hermetic system in FIG.1 (shown with a reciprocating compressor), the second is semi hermetic (also FIG.1), the third is open type system in FIG.2 (shown with a reciprocating compressor).

The open type system usually handles bigger capacity than the former two systems. In the open type, the motor is not sealed with compressor and the leak from the compressor crankshaft seal is a constant problem (FIG 2). In hermetic system (Including semi hermetic system), the whole motor and compressor are sealed in a dome. There is no leak problem but the heating problem from the motor electrical winding is a major consideration.

The electrical winding in the motor generates heat, which can burn the motor and the refrigerant. This causes environmental pollution (the destroyed refrigerant must be processed then dumped) and it is expensive to repair the motor.

BRIEF SUMMARY OF THE INVENTION:

The mike 8001 induction motor design will solve the electrical winding heating problem of the hermetic and semi hermetic system. This design (mike 8001 induction motor design) also can make bigger capacity hermetic (also semi hermetic) system than it is now by using bigger motor.

If we can put the stator electrical winding along with its most part of each stator pole outside the dome, leave the rest small part of each stator pole and the whole rotor assembly inside the dome (or the end edge of the stator poles are in the same plane as the inside surface of the dome), then we can solve the stator electrical

heating problem and also there is no leak problem. With this way, we can use a bigger motor to make bigger capacity hermetic system, a capacity as open system is.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING:

FIG.1 hermetic & semi hermetic refrigeration or air condition system.

FIG.2 open type system of refrigeration or air condition.

FIG.3 an alternative view of FIG.1

FIG.4 the mike 8001 induction motor design

FIG.4-1 enlarged part of FIG.4

FIG.4-2 enlarged part of FIG.4

FIG.4-3 enlarged part of FIG.4

FIG.4-4 cross section view of FIG.4-3

FIG.4-5 mike 8001 induction motor design with stator electrical winding

FIG.4-6 cross section view of FIG.4-5

FIG.4-7 mike 8001-1 induction motor design with the edge of the stator pole is in the same plane as the inside surface of the dome

FIG.4-8 cross section view of FIG.4-7

FIG.5 view of traditional motor stator

FIG.5-1 Cross-section view of FIG.5-1

FIG.5-2 view of traditional motor stator with its electrical winding

FIG.5-3 cross section view of FIG.5-2

FIG.6 view of laminated structure of motor stator

FIG.7 mike 8002 stator design, to show the dome, the cutting line, the stator and stator Pole

FIG.7-1 cross section view of FIG.7

FIG.7-2 stator pole part left with stator body after cutting

FIG.7-3 cross section view of FIG.7-2

FIG.7-4 stator pole part left with dome after cutting

FIG.7-5 cross section view of FIG.7-4

FIG.8 gas valve with mike 8001 induction motor design

DETAILED DECRIPTION OF INVENTION:

As mentioned before, in both hermetic and semi hermetic system, the whole motor (including its stator electrical winding) are sealed in the same dome with the compressor (as FIG.1).

For clarity, I reconstructed the FIG.1 in the way as the FIG.3 so the motor part is easily to be seen and separated from the compressor assembly farther away. This FIG.3 is different from FIG2 (open system). The FIG.3 gets no opening to the outside (no motor shaft entrance from outside). Everything is still sealed in the

dome; just the direction of figure, compressor piston, the shape of dome is modified from FIG.1 for clarity.

The mike 8001 induction motor design (FIG.4) put the stator electrical winding outside the dome (shown with heavy line) along with its most part of each stator pole, leave the rest small part of each stator pole and the whole rotor assembly inside the dome. The nonmagnetic (or diamagnetic) material made dome is welded to stator poles to leave most part of each stator pole and its electrical winding outside the dome and seal a small part of each stator pole and the whole rotor assembly inside the dome. The part of the dome, which is surrounding the motor rotor assembly, should be nonmagnetic (or diamagnetic) material made, so the magnetic field in the motor will not be changed. The rest of the dome can be made with materials other than nonmagnetic (and diamagnetic) one because the magnetic field in the motor will not be influenced by that part of the dome.

The enlarged part of FIG.4 is shown in FIG.4-1 (dome shown with heavy line), 4-2,4-3. The cross section view of FIG.4-3 is shown in FIG.4-4.

The mike 8001 design with stator electrical winding is shown on FIG.4-5 and its cross section view is shown on FIG.4-6.

The end edge of the stator poles can be in the same plane as the inside surface of the dome (like Fig.4-7, mike 8001-1 induction motor design).
The cross section of FIG.4-7 is shown on FIG.4-8

The traditional induction motor stator structure is shown in FIG.5 and its cross section view is shown in FIG.5-1.

The traditional induction motor with its stator electrical winding is shown on FIG.5-2 and its cross section is shown on FIG.5-3.

The material of the part (which is inside the motor) of the dome should be nonmagnetic (or diamagnetic) materials so the magnetic field generated by stator electrical winding will not be changed by the new position of the dome, or the motor may not work, this is indicated in FIG.4-1. The thickness of the part (which is welded to stator poles) of dome should be minimum (so stator poles can stay same depth as they was) but other part of the dome can be thick. The stator poles also reinforce the dome where they are welded. The mechanic strength of the dome for supporting motor and compressor should be strong enough.

Because the stator is a laminated structure as in FIG.6 (to reduce the eddy current), the refrigerant can leak through between stator pieces. We also need welded stator pieces together. The solder here we use to weld should be able to reduce the eddy current in the stator.

In order to make the repair job easier we can cut the stator poles in a way like FIG.7 (mike 8002 design). So the electrical winding and most part of stator Structure can be detached from motor and replaced easily. In this way, the efficiency

of the motor may be reduced due to the small air gap in the stator pole after the cutting.

The cross section view of FIG.7 is shown on FIG.7-1. The cross section view of FIG.7 is shown on FIG.7-1. The stator part, which can be detached from the dome, is show on FIG.7-2. The cross section view of FIG.7-2 is shown in FIG.7-3. After the cutting, the stator pole part left with the dome is shown on FIG.7-4. The cross section view of FIG.7-4 is shown on FIG.7-5.

A small mike 8001(& 8002) motor design can be used as an electronic controlled valve without leak problem because all moving part of the valve is welded sealed inside its dome. (FIG.8, dome shows with heavy line). A metering device in refrigeration system can also be made with this design. The mechanic force to open and close valve is generated inside the welded sealed space, not from outside. There is no leak possibility in this design.